

EFFECT OF HEXAVALENT CHROMIUM ON PULMONARY FUNCTION IN CHILDREN

Papadimitriou E. MD¹, Priftis K. MD PhD³, Pililitsis L. MD¹, Kouroutou P. MD¹, Riza E. PhD¹, Papasaranti E MS¹, Veloudaki A. MA^{1,2}, Linos A. MD MPH PhD^{1,2}

1. Athens Medical School, 75 Mikras Asias Street, Athens, Greece
2. Prolepsis Institute of Preventive Environmental and Occupational Medicine, 7 Fragoklissias Str, Maroussi, Athens, Greece
3. 3rd Department Athens Attikon Hospital, Chaidari, Athens, Greece

Background and aims: CrVI (Hexavalent chromium) is a known carcinogen when inhaled. Little information is available on its possible association with PEFR (Peak Expiratory Flow Rate), FVC (Forced Vital Capacity), FEV₁ (Forced Expiratory Volume in 1 sec) and asthma related symptoms in children. The study aims to examine the association between children residing in Oinofyta, an industrial, highly contaminated with CrVI, region in Greece and asthma. The role of additional risk factors will be examined and quantified. Children in Oinofyta, could be exposed to CrVI through inhalation, oral consumption, bathing or contact with contaminated ground.

Methods: Two socioeconomically comparable cohorts of children (150 children each), one exposed to CrVI and a control group will be studied. Spirometry will be performed in all members of the cohorts. PEFR, FVC and FEV₁ will be measured and cohorts' parents will be interviewed concerning children's respiratory health, demographic and household characteristics, parental occupation and indoor air pollutants (including smoking). The study has been approved by the University Ethics Committee and the Ministry of Education. All parents are asked to sign an informed consent.

Results: So far, 66 parents have been approached and all agreed to participate. 66 children were examined, 14 out of which (21%) had a subnormal spirometry, as demonstrated by reduced PEFR, FVC and FEV₁, while the prevalence of asthma in Greece has been recently reported to be 5-10%. Furthermore, 12 from the 56 (21%) parents that completed the interview stated that their children had at some point obstructive airway symptoms. These results represent only a small part of the study. We expect to complete examinations and interviews in both cohorts by July 2011.

Conclusion: So far, it appears that exposure to CrVI influences pulmonary function and causes asthma related symptoms in children.